

Week #8 – Building Kernels

Overview of the week's objectives

The Linux kernel is available as source / software packages and might be built from scratch in order to tune its settings to adapt it to specific requirements. This offers a new level of flexibility in terms of adapting your technology to your objectives which contrasts with the need for most IT department relying on commercial solutions to adapt their objectives to available vendor solutions.

This week you will explore the Linux kernel and the various methods to compile, package, and install it. By the end, you should know how to setup a build system, install and configure the kernel, and build RPM and Debian-based kernel packages.

TODO List

Please refer to all previous “Week’s Overview PDFs” for details / advice relating to, or concerning, each of the tasks detailed in the remainder of this overview. While we focus on instructions specific to this week’s material herein, previous instructions still apply.

Learning Activity			Time in hours		Points
			Expected	Spent	
Reading Assignments	O2L9	Studying Guides & Videos	2		
Practice Assignments	O2L9-PQ	Taking Practice Quizzes	1		
	W8-PA	Working on PAs & Participating to PA forums	5		
Graded Assignments	W8-GQ	Taking Graded Quiz	1		2
	W8-DF	Participating to Discussion forums	3		1
			12		3

Task #1 – Study & Practice

Refer to “Week #2’s Overview PDF” and/or all previous “Week’s Overview PDFs” for detailed instructions on how to use [online module guides](#), [practice quizzes](#) and our [support forum](#) while working on this task.

Task #2 – Practice Assignments

Refer to “Week #2’s Overview PDF” and/or all previous “Week’s Overview PDFs” for detailed instructions applying to all Practice Assignments.

Add a simple Linux kernel compile exercise. The exercise should just be something simple to let students get their feet wet or get a better concept of what a kernel. Perhaps the exercise could involve a simple side-by-side dual boot kernel. Question #2 touches on this. But perhaps there can be the option to allow students to perform a kernel compilation.

Question #1

Your company is configuring Linux machines for a secure environment. Your manager does not want users to access USB ports to be able to copy files off the computer. Your manager has asked you to create a test Debian kernel package for Quality Assurance to test. Prepare a “USB-less” Debian kernel package on your virtual machine using the most recent kernel version found on the Linux kernel distribution site.

Question #2

Install this kernel package on a brand new Linux virtual machine you will prepare just for testing purposes

Question #3

Propose a method to verify whether the USB subsystem is deactivated in the kernel.

Task #3 – Discussion Forums

Refer to “Week #2’s Overview PDF” and/or all previous “Week’s Overview PDFs” for detailed instructions applying to all discussion forums assignments.

Topic #1 – W8DF – LKM vs. DLL

Compare the Linux Kernel Modules, LKM, used in Linux systems to the DLL found on Microsoft Windows systems. Based on what you have learned about the modular approach to the Linux kernel, software packaging, and kernel management, what are the

positive and negative sides of administrating both environments? Are they even comparable? What would be the equivalent of DLLs in a Unix / Linux environment?

Please be specific and give examples. Once you have posted your initial response, reply to two of your classmates by adding to, or disputing their response.

Task #4 – Graded quizzes

Refer to “Week #2’s Overview PDF” and/or all previous “Week’s Overview PDFs” for detailed instructions applying to all graded quizzes.